tients were identified as having true aortic rupture by the radiographic presence of retroperitoneal hematoma, hemoperitoneum, or aortocaval fistula and included for analysis. 35 patients were excluded because of no radiographic signs of aortic rupture (32), or having not undergone repair (3). Re-analysis of this data yielded thirty-day mortality rates for EVAR and OR of 38% (10/26) and 47% (8/17), respectively (NS). In all cases decisions on type of repair were made on the basis of anatomy. 29% (5/17) patients undergoing OR had infrarenal AAA, 4 of these were unsuitable for repair for anatomic reasons, and the last converted to open after otherwise successful EVAR for persistent aortocaval fistula. 96% (25/26) of patients undergoing EVAR had infrarenal RAAA, while 1 had juxtarenal RAAA with left renal coverage.

Conclusions: Results of EVAR for RAAA appear significantly better than OR based on coding data, however review of CT scans suggest that this difference is due to inappropriate coding. Accordingly, thirty-day mortality for patients with true CT scan documented aortic rupture treated with EVAR is similar to that for open repair. These results suggest that outcomes with EVAR for RAAA must not be analyzed using administrative databases or coding data alone.

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RR3.

Total Laparoscopic versus Conventional Abdominal Aortic Aneurysm Repair: How Safe?

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Objectives: This study was designed by a group of vascular surgeons trained in laparoscopic aortic surgery to identify differences in the outcome between total laparoscopic and open surgical repair of AAA.

Methods: From January 2006 and December 2009,139 patients who presented an AAA underwent total laparoscopic repair (group 1, n=30) or open repair (group 2, n=109). These groups were matched in a case-control fashion by risk factors and ASA classification. Univariate and logistic regression analysis were used to compare the results.

Results: Median operative time and median aortic clamping time were significantly longer in group 1 than in group 2 (Table 1). Median total blood loss was superior in group I than in group II (p = .01). There were significantly more intraoperative local/vascular complications in group 1 (23.3%) than in group 2 (6.4%, p=0.01). Logistic regression analysis revealed that the strongest predictor of complications was the laparoscopic technique with an odds ratio of 5.6 [95% CI, 1.6 to 19.4, p=.006].

Conclusions: This study suggests that total laparoscopic aortic surgery even in well trained hands is not a safe procedure to treat AAA.

Table 2. Intraoperative and postoperative results

	Group 1 (n=30)	*Group 2 (n=109)*	*p*
Aortoaortic aneurysm	25 (83.3%)	52 (47.7%)	.02
Aortoiliac aneurysm	5 (16.7%)	57 (52.3%)	
Operative time*	273 (182-621)	226 (82-690)	.005
Aortic clamping time*	110 (30-200)	60 (15-150)	.005
Total Blood loss**	1550 (400-6300)	1200 (200-6000)	.009
Conversion to open surgery	9 (30.0%)		
Reoperation <30 days	4 (13.3%)	3 (2.7%)	.04
Death < 30 days	1 (3.3%)	1 (0.9%)	.38
Complications (all)	9 (30.0%)	17 (15.6%)	.07
Local/vascular complications	7 (23.3%)	7 (6.4%)	.01
ICU stay (days)†	1 (1-22)	2 (1-47)	.19
Hospital stay (days)†	8 (5-22)	9 (4-63)	.07
Day removing NGT†	1 (0-5)	2 (0-15)	.005

*Median time in minutes (range).
**Median blood loss in mL (range).
†Median time in days (range).

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RR4.

Surgery for Descending Thoracic Aneurysms: Impact of Hospital Type on Operative Techniques and Outcomes in the US Medicare Population

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Objectives: Favorable outcomes of TEVAR compared to open surgery(OPEN) for thoracic aortic aneurysms-(DTA) have led to increased TEVAR use. We evaluated the impact of hospital teaching status and volume on clinical outcomes of intact DTA repair.

Methods: The Medicare data (2004-2007) was queried to identify OPEN or TEVAR for DTA. Hospitals were stratified by DTA volume into HIGH(≥8cases/year) or LOW(<8), and teaching(TEACH) or non-teaching(NON-T). Impact of hospital variables on 30 day mortality for OPEN and TEVAR were analyzed.

Results: 722 hospitals performing 3554 OPEN and/or 3517 TEVAR repairs were identified. DTA repair increased(P<0.01) from 1375(2004) to 1987(2007). Hospitals performing OPEN remained stable (58%(2004); 48%(2007);(P=NS)) while those performing TEVAR increased(P<0.01) from 17%(2004) to 72%(2007). Overall repair type shifted from OPEN (74%OPEN in 2004 (the year prior to initial commercial availability of TEVAR); P<0.01) to TEVAR(39% OPEN in 2007; P<0.01). Fraction of OPEN at LOW hospitals decreased from 56%(2004) to 44% (2007) (P<0.01), whereas TEVAR increased from 24% (2004) to 51% (2007) (P<0.01).

Mortality for OPEN was higher at LOW hospitals (14.5% LOW vs. 9.2% HIGH; P<0.01), while TEVAR mortality was similar (4.6% LOW vs. 5.6% HIGH; P=NS). LOW volume increased mortality for OPEN (OR 1.39 [95%CI: 1.1-1.8]; P<0.01) and not TEVAR. Hospital teaching status remained stable over time and did not influence OPEN or TEVAR mortality.

Conclusions: There has been a dramatic shift in DTA repair away from OPEN with increasing use of TEVAR even in low volume hospitals, wherein TEVAR has eliminated the negative volume effect on perioperative outcomes seen with OPEN. These data suggest OPEN repair should be concentrated in high volume centers, whereas TEVAR can be safely performed across a spectrum of hospitals.

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RR5.

Annual Rupture Risk of Abdominal Aortic Aneurysm Enlargement without Detectable Endoleak after EVAR: A EUROSTAR Registry Report

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Objectives: Whether abdominal aortic aneurysm (AAA) enlargement after endovascular repair without an identifiable endoleak is a risk factor for AAA rupture remains controversial. To our knowledge, studies with large patient numbers investigating this topic are missing. Therefore, a considerable number of conversions to open AAA repair have been performed in this patient group which may not always be justified. The purpose of this study was to evaluate AAA rupture risk in patients with AAA enlargement without detectable endoleaks after EVAR treatment and when a watch-and-wait policy is allowed.

Methods: Baseline characteristics and follow-up data were collected prospectively by case record forms. Follow-up visits, were scheduled at 1, 6, 12, 18, 24 months and annually thereafter. Findings at follow-up visits involved clinical examination and imaging studies. Patients were divided into three groups based on the degree of shrinkage or enlargement. Group A represents patients with >8mm aneurysm shrinkage, group B consisted of patients with ≤8mm shrinkage to ≤8mm enlargement and group C had an aneurysm enlargement of >8mm.

Results: 6337 patients who were enrolled prospectively in the EUROSTAR database between 1996 and 2006 constituted the basis for this analysis. Group A included 691 patients, group B 5307 patients and group C 339 patients. Ruptures occurred in 3 patients in group A, 14 patients in group B and 9 patients in group C. The annual rate of rupture in group C was <1% in the first 4 years, but accelerated to 7.5 - 13.6% in the years thereafter. The mortality rate of elective conversion to open AAA repair was 6.7%.

Conclusions: The risk of rupture in patients with an abdominal aneurysm enlargement of more than 8 mm without detectable endoleaks is <1% in the first 4 years. A conservative treatment policy in the first 4 years is therefore advisable. After 4 years of follow-up we see an increased annual rupture risk, however, groups are small and selection bias could play a role.

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RR6.

Impact of Surgeon Practice Pattern in Shunt Use during CEA for Contralateral Carotid Occlusion

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Objectives: We hypothesized that surgeons who rarely shunt in CEA have worse outcomes when shunt use is required, such as in contralateral carotid occlusion (CCO). We studied the association between surgeon practice pattern in shunt placement and 30-day stroke/death rate in patients with CCO.

Methods: Of 6,084 CEAs performed in the Vascular Study Group of New England (2002-2009), 356 patients underwent CEA with CCO. We compared 30-day risk-adjusted stroke/death rate across surgeons who selectively shunt (0-95% of CEA) or routinely shunt (>95% of CEA).

Results: Of 356 patients with CCO, 117 patients (33%) underwent CEA without a shunt, 175 (49%) with routine shunt use, and 64 (18%) had a shunt placed for a neurologic indication. There was no difference in 30-day stroke/death rate by shunt use (3.1% no shunt; 4.1% routine shunt; 4.3% shunt for indication; p=0.8). However, across surgeon practice pattern, the observed risk of 30-day stroke or death was higher for surgeons who rarely placed shunts, and lower for surgeons who routinely placed shunts (Figure). This difference was not due to patient characteristics, as the predicted risk of 30-day stroke/death was similar across surgeon practice patterns.